

**Owens Lake Revised Moat and Row Dust Control Measures
Addendum No. 1 to the
2009 Supplemental Environmental Impact Report**

May 2010

1.0 INTRODUCTION

The City of Los Angeles Department of Water and Power (LADWP) is currently implementing a dust control program on Owens Lake in order to eliminate exceedences of the federal particulate (PM10) air quality standard. LADWP constructs and operates dust control measures (DCMs) on the lake in compliance with Agreements with the Great Basin Unified Air Pollution Control District (GBUAPCD), lease agreements for use of state lands (administered by the California State Lands Commission (CSLC)), and other regulatory approvals. As an element of Phase 7 of the dust control program, seven parcels on 3.5 square miles of Owens Lake were proposed to be altered by the construction of moats and rows. A lease from CSLC for one of the seven parcels (area T1A-1) was granted in December 2009 for the installation of sand fences; construction is on-going. However, a lease to construct the moat and row facilities was not approved in April 2010, and therefore LADWP is proposing a temporary DCM for the remaining locations.

LADWP is currently proposing to amend the project description for the Phase 7 moat and row project to implement tillage on a portion of the project area as an interim dust control measure. Tillage is an adaptive solution that would be implemented until approval of a permanent dust control solution for the moat and row areas is developed through a stakeholder lake-wide master planning process, permitted, and approved.

1.1 CEQA HISTORY

1997 Owens Valley PM10 Planning Area Demonstration of Attainment State Implementation Plan (SIP) Final Environmental Impact Report. This document evaluated implementation of DCMs (shallow flooding, managed vegetation, and application of gravel) for approximately 19.4 square miles within the Owens Lake Planning Area.

1998 Owens Valley PM10 Planning Area Demonstration of Attainment SIP Addendum No. 1 to the Final Environmental Impact Report. This document addressed changes to the 1997 SIP project description approved in a Memorandum of Agreement (MOA) (July 28, 1998) between GBUAPCD and City of Los Angeles. No new or expanded dust control areas (DCAs) were approved.

2003 Owens Valley PM10 Planning Area Demonstration of Attainment SIP Integrated Environmental Impact Report. This document was prepared in response to monitoring data on the effectiveness of DCMs implemented as part of the 1997 SIP. The EIR evaluated implementation of an additional 10.4 square miles of DCMs (i.e., shallow

flooding, managed vegetation), mainline and drainline water pipeline connections, subsurface drainage system improvements, power supply and control facilities, fertilizer and water treatment injection systems, utility corridors, power cables and access roads, and construction corridors. A total of 10.4 square miles of DCMs were approved with this project, bringing the total area of DCMs approved to 29.8 square miles (19.4 square miles approved with the 1997 SIP).

2004 Environmental Impact Report Addendum No. 1 to the 2003 Owens Valley PM10 Planning Area Demonstration of Attainment SIP. This document evaluated the exchange of 1.3 square miles of DCAs originally designated for managed vegetation to shallow flooding and the addition of 223 acres of shallow flooding outside the area analyzed in the 2003 SIP EIR.

Final Subsequent Environmental Impact Report for the 2008 Owens Valley PM10 Planning Area Demonstration of Attainment State Implementation Plan (2008 SIP FSEIR) (State Clearinghouse #2007021127). Adopted by GBUAPCD in February 2008, the SIP FSEIR evaluated the implementation of 15.1 square miles of DCMs in the Owens Lake Planning Area. DCMs evaluated and approved included shallow flooding, moat and row elements, gravel blanket, and application of gravel as riprap (a loose assemblage of broken stones) on berms in shallow flooding ponds or as a cap on rows in moat and row elements. Approximately 3.5 square miles of moat and row DCMs were evaluated and approved for the project.

Final Supplemental Environmental Impact Report for the Owens Lake Revised Moat and Row Dust Control Measures (2009 Moat and Row FSEIR) (State Clearinghouse #2008121074). LADWP, as CEQA lead agency, adopted the Moat and Row FSEIR in September 2009. The revised moat and row project was a component of the larger, previously approved 2008 State Implementation Plan (SIP). The FSEIR tiered-off the 2008 SIP FSEIR to address changes to the design and operation and maintenance plan for the moat and row DCMs.

1.2 PRESENT DOCUMENT/PROJECT

2010 Addendum No. 1 to the 2009 Moat and Row FSEIR. This Addendum serves as CEQA compliance for the modification of the Phase 7 moat and row project to implement tillage as an interim measure. This document is an Addendum to the 2009 Final Supplemental Environmental Impact Report for the Owens Lake Revised Moat and Row Dust Control Measures to address changes in the project since adoption of the FSEIR.

LADWP has determined that tillage differs from the moat and row DCMs evaluated in the 2009 Moat and Row FSEIR such that, in accordance with Section 15164 of the State CEQA Guidelines, minor modifications and clarifications to the EIR warrant preparation of an addendum to the 2009 Moat and Row FSEIR. Environmental analysis presented in this Addendum demonstrates that the impacts and mitigation requirements identified in the 2009 Moat and Row FSEIR remain substantively unchanged by the modification of

the project description to implement tillage. This supports the finding that the proposed modification does not raise any new issues and does not exceed the level of impacts identified in the previous 2009 Moat and Row FSEIR.

2.0 TILLAGE DESCRIPTION

2.1 Objective

In 2009, a lease application for use of state lands for the Phase 7 moat and row project was submitted to the CSLC. Since this application has not been granted, and since LADWP is required to implement dust controls on the Phase 7 parcels by October 2010 under orders issued by the GBUAPCD, the project description for the moat and row DCM is proposed to be amended to implement tillage of 3.1 square miles of the moat and row parcels as an interim measure. The objective of the modified project description is to reduce the frequency and intensity of dust emissions on 3.1 square miles of Owens Lake.

2.2 Location of Areas to be Tilled

The 110 square-mile dry Owens Lake is located in Inyo County, California, approximately 5 miles south of the community of Lone Pine and approximately 61 miles south of the city of Bishop. LADWP is proposing to till 3.1 square miles within six parcels on Owens Lake playa (Figure 1) as an interim dust control measure on areas previously designated for moat and row.

2.3 Tillage Overview

Tillage is a widely used method for wind erosion control in agricultural and arid regions around the world. It works by roughening the soil surface, rendering it more resistant to wind erosion. Surface roughness reduces the wind velocity at the surface and provides traps to catch windblown soil particles. Benefits of tillage include:

1. Can be implemented quickly with immediate effectiveness
2. No infrastructure requirements (or associated impacts)
3. Roughens surfaces but is otherwise lower profile than rows and does not obstruct views
4. Can be implemented in arid regions where access to water resources is limited

Literature describing tillage application and effectiveness for reducing wind erosion is cited in Attachment A.

Tillage was previously applied on the Owens playa for temporary dust control in some Shallow Flood construction areas between October 1, 2009 and April 1, 2010 (Figure 2). This tillage notably reduced the frequency and intensity of observed emissions within these areas, even when wind erosion occurred within untilled areas immediately adjacent.

A refined version of tillage is proposed for use on the playa dust control areas formerly designated for moat and row. Tillage would be conducted in swaths of tilled ridges with spacing between swaths allowing for monitoring access. There are two tillage configurations, corresponding to fine and coarse textured soils.



Figure 1. Proposed Tillage Areas and Estimated Average Soil Textural Category (to be field verified)



Figure 2. Temporary Tillage Areas (red) within Phase 7 Shallow Flood Construction Areas (Temporary tillage was in place from October 1, 2009 to April 1, 2010.)

The criteria considered in the establishment of these refined tillage configurations are:

- Prevailing winds
- Soil conditions
- Visible effects
- Monitoring access

Prevailing winds dictate the primary tillage direction. In practice, erosion control tillage ridges are formed approximately at right angles to prevailing winds to maximize friction and velocity reduction afforded by the tillage. Tillage direction would be determined for each area based on historic wind events, as recorded at monitoring stations on the lake. **Figure 3** shows an example of a wind rose showing prevailing north or north-northwest and south or south-southwest winds at a station. East-west tillage would be roughly perpendicular to these winds.

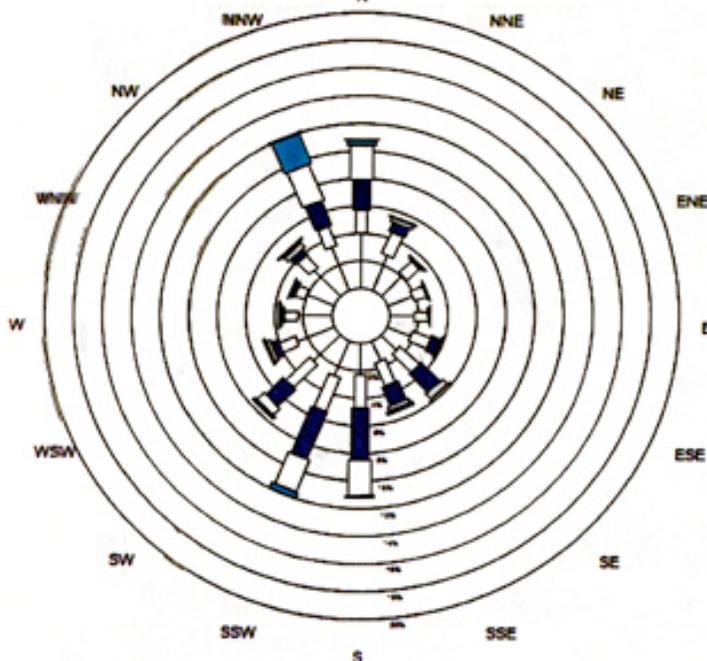


Figure 3. Wind rose showing 2007-2008 winds for the B-Tower Met Station

Soil conditions influence the depth and spacing of tillage. Soil textures within the area of interest range from sands to silty clays. In clay soils, higher soil cohesion produces larger soil clods and more resistant tilled ridges. Because clays produce higher, stronger ridges, ridge spacing can be wider. In these areas tillage may persist for multiple seasons before re-tillage is necessary. In sandy soils, tillage may be shallower and produce lower relief. In these cases, tilled ridges are more closely spaced. Sands also are less cohesive and therefore may need to be re-tilled more frequently within a season to maintain surface roughness.

Two tillage configurations are proposed. They are similar except for the width between tilled ridges, which is wider in clay textured soils and narrower in sandy soils. **Figure 4** shows the general configuration and provides ridge spacings for both. **Figure 1** shows estimated average soil textural categories for the six proposed tillage areas.

Gaps in tilled areas, both transverse and longitudinal to the direction of bulldozer travel, are included for ease of potential monitoring needs (**Figure 4**). Gaps would be spaced at approximately 1,000 feet. The size of the gaps, ranging from 15 to 20 feet, is limited to avoid wind jetting and unprotected playa areas, but large enough for vehicular passage should it be necessary.

Visible effects were considered in the configuration of tillage rows and row curvature. While the primary direction of tillage will be perpendicular to prevailing winds, some **departure** (up to approximately 30 degrees in either direction, see **Figure 5**) from this **direction** will avoid long, straight rows and allow for curving, more natural-looking **tillage lines**. Curved tillage rows also provide some protection from off-primary wind **directions** and help to avoid jetting of winds down straight rows.

2.4 Construction

Soil texture information in the tillage areas will be confirmed with field mapping to inform final configuration selection prior to tillage installation. Tillage on fine textured (clayey) soil areas will be completed with a bulldozer equipped with a tilted blade corner to cut through soil to a depth of 12 to 24 inches below the native surface, with an approximate average depth of 18 inches. Tillage passes will be spaced such that resultant soil rows are 18 to 36 inches high and spaced at 8 to 14 feet, creating rough ridges similar to those built in shallow flood construction areas before April 1, 2010 flooding operations began (**Figure 6**). This very rough tillage provides effective wind erosion control and relatively durable tillage structure that is likely to remain effective for longer periods, reducing the need for re-tilling.

Tillage on coarse textured (sandy) areas will likely be completed with conventional agricultural equipment such as a moldboard plow, one-way disk or other surface roughening implement. These **implements** will till to a depth of 6 to 18 inches below **native surface** and will **produce closer, smaller ridges or divots** (approximately 12 to 36 **inches** apart) with a **height of 4 to 18 inches**. These sandy soil ridges or divots will **produce more temporary erosion control and** will likely require re-tilling one or more **times within the dust season**.

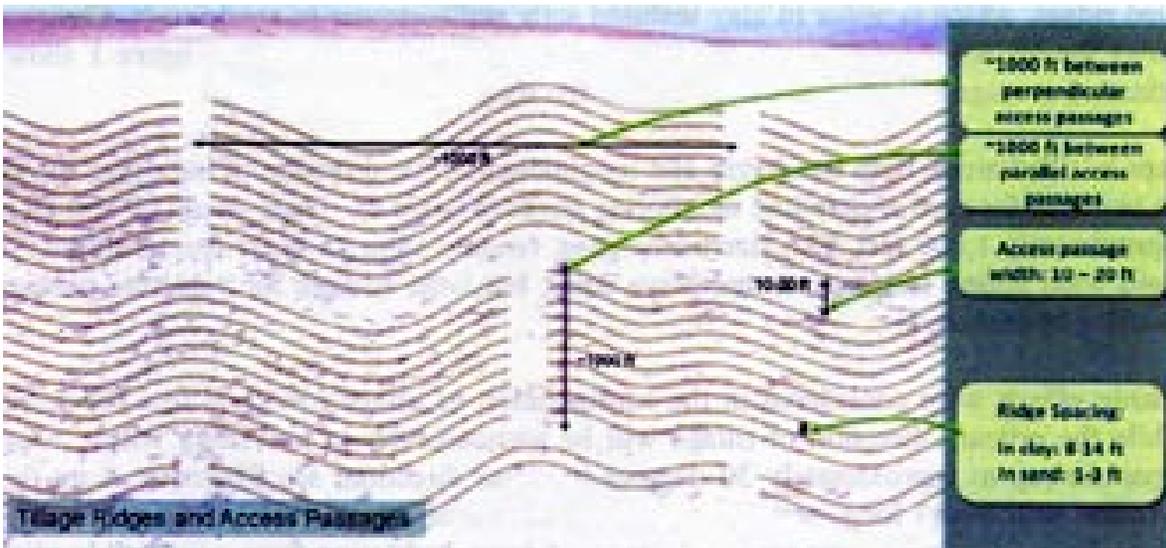


Figure 4. Conceptual Tillage Configuration (clay and sand spacing listed)
(not to scale)

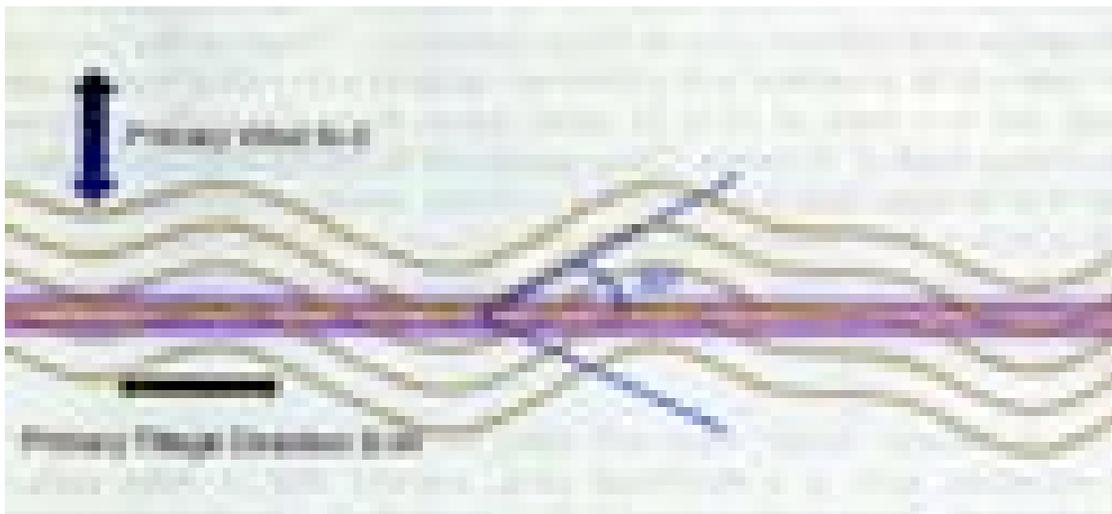


Figure 5. Curving Configuration of Tillage Rows Vary by up to 30 Degrees in either Direction from Primary Tillage Direction

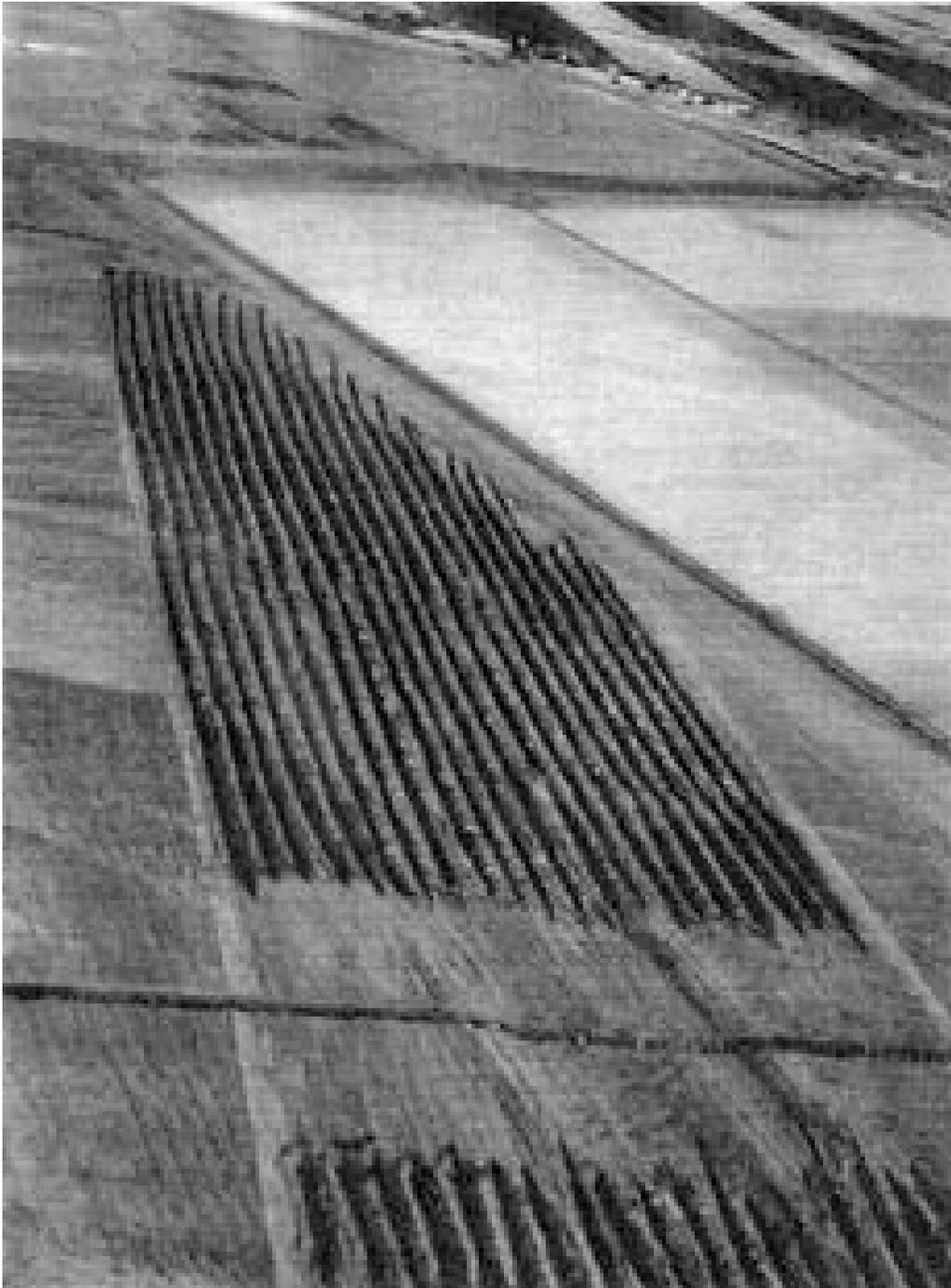


Figure 6. Aerial View of Tillage on Owens Lake – 2009.